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ABSTRACT

The effects of two primary reading programs using a programed format (with and without audio-supplement) and a conventional format (the program format deprogramed) in a highly consistent sound-symbol system of reading at three primary grade levels were compared, using a pretest, post-test control group design. The degree of suitability of programed texts in reading instruction for primary children at various intelligence levels, at various age levels, and in different sex groups was also investigated. Treatment 1 followed a conventional approach in which commercial programed materials were deprogramed by stapling immediate feedback columns on the pages of the linear text so the learner could not use immediate feedback information. Treatment 2 used the same commercial series as Treatment 1 but in the prescribed programed way. Treatment 3 used the same series as Treatment 1 and 2 but with audio-reinforcement. An analysis of variance revealed Treatment 3 to be the most effective in grade 1 and Treatment 2 to be the most effective in grade 2; grade 3 findings were not statistically significant. Some statistically significant findings related to chronological age, mental age, and sex are also reported. (Author/CL)

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PROGRAMMED APPROACH VS CONVENTIONAL APPROACH USING A HIGHLY CONSISTENT SOUND-SYMBOL SYSTEM OF READING IN THREE PRIMARY GRADES

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PURPOSE OF THE STUDY

The purpose of this study was to attempt to reveal the effects on reading achievement of two primary reading programs using a programmed format (with and without audio-supplement) and a conventional format (the programmed format deprogrammed) in a highly consistent sound-symbol system of reading at three primary grade levels. In addition to comparing treatments per se, it was the purpose of this study to explore the degree of suitability of programmed texts in reading instruction for primary children (a) at various intelligence levels, (b) at various age levels, and (c) in different sex groups.

STATEMENT OF THE PROBLEM

Will the experimental treatments used produce any significant main effects at each grade level?

Will there be any over-all significance relative to treatments within the high and low levels of mental age and chronological age and within the male and female sex categories for the dependent variables (measures of decoding skill and measures of comprehension skill)?

DEFINITIONS OF KEY TERMS

Reading. The definition of reading used in this study states that reading is the act of turning the stimulus of the graphic shapes on a surface back into speech. This is a definition used by many linguists. The commonly accepted definition of reading states that reading is getting meaning from the print on the page. Leonard Bloomfield was one of the first individuals to differentiate between the act of reading (recognition of grapheme-phoneme correspondences) and the goal of reading (comprehension).

The shapes represent speech, and meaning is not found in the marks but in the speech which the marks represent. Some linguists would say that a child can read when he can recognize symbol-sound correspondence to the point that he can respond to the marks with appropriate speech. (1) This can be called reading phase one. Also included in this study is an extension of the above definition of reading. This extension says that a concomitant of the reading act described above is a spontaneous and/or provoked movement by the reader toward ever increasing his comprehension of what he reads. This is a process of thinking in which the reader uses his background of knowledge and feelings to interpret the meaning the author has tried to communicate; this is called reading phase two.

Reading is operationally defined by the dependent variables represented by the subtests of the criterion measures used. The subtests measured decoding skills and comprehension skills.

"Deprogrammed" text. "Deprogrammed" text refers to a modified programmed text used by students in Treatment 1. Deprogramming was achieved by stapling the immediate feedback columns on the pages of the linear text

so the learner could not make use of the immediate feedback information.

STUDY DESIGN AND THEORETICAL FRAMEWORK

The design of this study was an experimental pretest-posttest control group design. The groups, which were called "treatment" groups, were experimental (Treatment Group 2 and Treatment Group 3) and controlled (Treatment Group 1).

Treatment 1 (T_1) followed a conventional deprogrammed approach. Commercial programmed materials were deprogrammed by stapling the immediate feedback columns on the pages of the linear text so the learner could not make use of the immediate feedback information. The deprogrammed format permitted conventional, teacher-directed, group-oriented reading instruction. Some conventional strategies used were: oral reading in a small group setting, development of sight word vocabulary, teacher-guided small group preparation and silent reading with teacher-directed and teacher-paced follow-up. Treatment 1 teachers used a dual analytic-synthetic approach to reading in contrast to the singular synthetic approach used in Treatments 2 and 3.

Treatment 2 (T_2) used the same commercial series as Treatment 1 but in the prescribed programmed way. The approach was synthetic, inductive, and very individualized. Sight word instruction and other analytic strategies were absent from this treatment. Student problems of word recognition and analysis were approached inductively so students could learn to synthesize word elements into whole words. Treatment 2 was student-manipulated, self-directed, auto-instructional, and highly individualized.

Treatment 3 (T_3) used the same programmed series as Treatment 2. The inductive, synthetic strategies common in Treatment 2 were used in Treatment 3. Like Treatment 2, Treatment 3 was student-manipulated, self-directed, auto-instructional, and highly individualized. The chief difference between Treatments 2 and 3 was the audio-supplement used in Treatment 3. The Treatment 3 audio-supplement provided additional reinforcement through the use of teacher-made tapes and student-made tapes. The hard cover story books which accompany the programmed series were all recorded for student use (one to two hours per week). Teacher-prepared lessons for seatwork were also taped.

In contrast to Treatment 2 and Treatment 3 teachers, Treatment 1 teachers addressed small "individual" groups who then worked at a place and pace common to the entire ("individual") group. Teachers in Treatments 2 and 3 briefly addressed the class group. Class members then proceeded to work at their individual place and pace in the program.

Some educators would have us believe that the salient features of programmed instruction (use of behavioral goals, sequential organization of the material, active student involvement, use of individual rates of progress, use of immediate feedback, and the reinforcement principle) are unique to programmed methodology. The writer rejects this assumption and submits that programmed elements are also evident in conventional and non-programmed courses. The rationale for this study holds that whole programmed principles may be found sometimes in conventional instruction, they are always found at work in programmed instruction and are thus readily observable and easily measured. The reading program under investigation is auto-instructional requiring a student-centered methodology, encouraging individual rates of progress and operating under the immediate feedback and reinforcement principle.

MAIN HYPOTHESES

The null hypotheses of this study required the testing of the following effects at three primary grade levels:

1. The effect of reading programs emphasizing a synthetic approach, with a high degree of consistency in grapheme-phoneme correspondence in the vocabulary used, upon reading achievement defined in terms of specific dependent variables in contrast to the effect of a program using the same basic vocabulary but focusing on a synthetic-analytic approach and concomitant vocabulary irregularities.

2. The effect of a programmed approach versus a deprogrammed or conventional approach upon reading achievement.

3. The effect of an enriched programmed approach through the use of additional audio-reinforcement.

The following hypotheses are stated in the null form for purposes of testing at the first grade level:

1. First grade reading programs possessing a high degree of consistency in grapheme-phoneme correspondences in the vocabulary introduced in a programmed approach (Program 2, Program 3) will not produce achievement scores which differ significantly in (a) word reading, (b) vocabulary, (c) paragraph meaning, (d) word study skills, (e) regular word identification, and (f) irregular word identification from the same achievement scores of the reading program possessing a high degree of consistency in grapheme-phoneme correspondences in the vocabulary introduced in a conventional approach (Program 1).

2. First grade reading programs possessing a high degree of consistency in grapheme-phoneme correspondences in the vocabulary introduced in an audio-supplemented programmed approach (Program 3) will not produce achievement scores which differ significantly in (a) word reading, (b) vocabulary, (c) paragraph meaning, (d) word study skills, (e) regular word identification, and (f) irregular word identification from the same achievement scores of the reading program possessing a high degree of consistency in grapheme-phoneme correspondences in the vocabulary introduced in a nonaudio-supplemented programmed approach (Program 2).

The null hypotheses were stated in a similar way for grades two and three.

OVERVIEW OF ANALYSES OF DATA, MAIN FINDINGS AND CONCLUSIONS

A one-way analysis of variance was used to compare treatments at each grade level. The F test was used in testing for significant treatment effects. If no significant treatment effects were found, no attempt was made to compare individual treatment groups except in cases where the observed F value was close to the critical region. Where the preliminary analysis of variance and the F test showed over-all significance, the Scheffé method was used to test the significance of the post hoc comparisons.

A two-way analysis of variance and the F test were used to reveal over-all significance relative to treatments within the high and low levels

of mental age and chronological age, and within the male and female sex categories for all the dependent variables. Contrasts for treatments within the categories of the independent variables were done if the F values for the appropriate two-way analyses of variance values were significant. In accordance with Scheffé's recommendation, tests on nested variables were done at .975 α = .025, and contrasts were done at .95 α = .05.

First Grade Level:

1. It was concluded that the auto-instructional program with audio-supplement (Treatment 3) produced significantly higher reading scores (on all sub-tests except vocabulary) than the conventional program (Treatment 1). (First Hypothesis: Part One.)

2. It was concluded that the auto-instructional program without audio-supplement (Treatment 2) did not produce any significantly higher reading scores than the conventional program (Treatment 1).

Treatment 1 (conventional) did produce significantly higher regular word identification scores than Treatment 2. (First Hypothesis: Part Two.)

3. It was concluded that the auto-instructional program with audio-supplement (Treatment 3) produced significantly higher reading scores (on all sub-tests except vocabulary) than the auto-instructional program without audio-supplement (Treatment 2). (Second Hypothesis.)

Second Grade Level:

1. It was concluded that the auto-instructional program with audio-supplement (Treatment 3) did not produce any significantly higher reading scores than the conventional program (Treatment 1). (Third Hypothesis: Part One.)

Treatment 1 (conventional) did produce significantly higher achievement scores in word study skills than Treatment 3 (audio).

2. It was concluded that the auto-instructional program without audio-supplement (Treatment 2) did produce some significantly higher reading scores (word study skills, regular word identification, and irregular word identification) when compared with the conventional program (Treatment 1).

(Third Hypothesis: Part Two.)

In summary, the programmed learning of Treatment 2 (non-audio) does seem to be more productive than the conventional learning at the second grade level on all tests, though not significantly.

3. It was concluded that the auto-instructional program with audio-supplement (Treatment 3) did not produce any significantly higher reading scores than the auto-instructional program without audio-supplement (Treatment 2). (Fourth Hypothesis: Part One.)

In an unexpected reversal of direction at year two, the auto-instructional program without audio-reinforcement (Treatment 2) produced significantly higher (a) word study skills, (b) regular word identification, and (c) irregular word identification scores than the auto-instructional program with audio-supplement (Treatment 3).

The second grade results indicate that programmed instruction per se seems to be appropriate for seven-year-olds. This should be studied further.

Third Grade Level:

The null hypotheses were not rejected at the third grade level. On the basis of the mean values achieved by each third grade group, the programmed groups (Treatments 2 and 3) did about as well as (in a few instances better than) the conventional groups (Treatment 1). These results are in the direction of the results of related research which report better performance from programmed instruction when compared with conventional instruction.

Exploratory Questions--Main Findings and Conclusions

Three independent variables were stated in three exploratory questions and applied to all three primary levels. The three variables were: mental age, chronological age, and sex. The exploratory questions investigated the relationship between the independent background variables and the dependent variables of word reading, vocabulary, word meaning, paragraph meaning, word study skills, regular word identification, and irregular word identification.

At the first grade level Treatment 3 was the most effective treatment within the high mental age level, within the high chronological age level,

and between treatments for males for all sub-tests except vocabulary in the high mental age and male categories and except regular word identification in the high chronological age category.

Within the low mental age level and within the low chronological age level for year one, Treatment 3 produced significantly higher word study skills scores.

Within the high mental age level for year one, Treatment 1 produced significantly higher regular word identification scores than Treatment 2.

In year one between treatments for females, Treatment 3 was the most effective treatment in producing higher regular and irregular word identification scores.

In grade two within the high mental age level, Treatment 2 produced significantly higher scores in word study skills, and regular and irregular word identification. Within the low mental age level at grade two, Treatment 2 produced significantly higher regular and irregular word identification scores.

Finally, at year two within the high and low chronological age levels and between treatments for males, Treatment 2 produced significantly higher scores in the area of word study skills. Also, the males in year two in Treatment 1 achieved significantly higher word study skills scores than males in Treatment 3.

It should be noted that Treatment 3 results reported above are significantly higher than both Treatment 1 and Treatment 2 results for most variables. The Treatment 2 results reported above are significantly higher than the Treatment 1 and Treatment 3 results for most of the variables reported.

The findings for year three were not significant.

In summary, the use of synthetic methods with programmed materials in teaching reading in the primary grades receives strong support from this study. Many of the findings and conclusions in this study reflect the findings and conclusions found in the related literature which is reported in detail in the original volume of this work.

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